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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,994	12/18/2001	Nigel Dunn-Coleman	GC698	1233

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EXAMINER	
RAO, MANJUNATH N	

ART UNIT	PAPER NUMBER
1652	

DATE MAILED: 11/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/026,994	DUNN-COLEMAN ET AL.	
	Examiner	Art Unit	
	Manjunath N. Rao, Ph.D.	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2,4-17,19,20,22-24 and 26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2,4-17,19,20,22-24 and 26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

CONTINUED EXAMINATION UNDER 37 CFR 1.114 AFTER FINAL REJECTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9-2-04 has been entered.

Claims 2, 4-17, 19-20, 22-24, 26 are now currently pending in this application.

Applicant's amendments and arguments filed on 11-19-03, have been fully considered and are deemed to be persuasive to overcome the rejections previously applied. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn. Specifically, Examiner has withdrawn the rejections under 35 U.S.C. 112, 2nd paragraph in view of claim amendments.

Specification

The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete all the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete all the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01. It is noted that applicant

has deleted only " http://". However, the inclusion of "www" in the web address can still invoke the browser. Hence Examiner urges applicants to spell out "world wide web" and/or delete the "www".

Sequence Compliance

Applicant is required to comply with the sequence rules by inserting the sequence identification numbers of all sequences recited within the claims and/or specification. It is particularly noted that applicant has now included a new SEQ ID NO:5. However, the specification provides for only four sequences. Applicant is urged to cancel SEQ ID NO:5. See particularly 37 CFR 1.821(d).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 8 and claims 9, 11, which depend therefrom are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 8 recites the phrase "intermediate to high stringency". The metes and bounds of the above phrase is not clear to the Examiner in the context of the above claim. A perusal of the specification did not provide any definition for the above phrase or specific hybridization conditions with reference to the above phrase thus rendering the claim indefinite. Examiner suggests deletion of the above phrase and replacing with just "high stringency".

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 2 and claims 5-7, 10, 12-17, 19-20 which depend from claim 2 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 2 is drawn to an isolated nucleic acid molecule "encoding a polypeptide having 98% sequence identity to the amino acid sequence presented in SEQ ID NO:5". Similarly SEQ ID NO:5 is recited at several other instances in the claim 2. However, a perusal of the specification indicates that applicants have no support for "SEQ ID NO:5" which now constitutes a "new matter". Therefore claim 2 and claims 5, 10, 12-17, 19-20 which depend from claim 2 are rejected for introducing "new matter" into the claims.

In the remarks section of their response, applicants mention that they are aware of the requirement of new sequence listing. However, to this date, applicants have filed no such amended sequence listing pointing out appropriate support for the same in the specification.

Claims 2, 4-17, 19-20, 22, 26 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a polynucleotide isolated from *T.reesei*, with SEQ ID NO:4 encoding a polypeptide with SEQ ID NO:2 having endoglucanase(EGVI) activity or a polynucleotide encoding a polypeptide having at least 95% or 98% sequence identity to SEQ ID NO:2 having endoglucanase activity, vectors and host cells comprising said polynucleotide and a

method of making said endoglucanase, by transforming a host cell with an expression vector comprising the above polynucleotides followed by cultivating the host cells and recovering the expressed endoglucanase, and being enabling for a recombinant host cell in which the mRNA encoding the polypeptide of SEQ ID NO:2 has been inactivated such that it does not express a functional endoglucanase, does not reasonably provide enablement for a polynucleotide isolated encoding polypeptides with endoglucanase activity, and having 90% sequence identity to SEQ ID NO:2 or polynucleotides that hybridize under intermediate to high stringency conditions to a probe (of any length) designed to hybridize with the nucleotide sequence disclosed in SEQ ID NO:1, vectors and host cells comprising such polynucleotides, and a method of making said encoded endoglucanase, by transforming a host cell with an expression vector comprising the said polynucleotides followed by cultivating the host cells and recovering the expressed endoglucanase, or a recombinant host cell which does not express a functional endoglucanase, of any fungi. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

Factors to be considered in determining whether undue experimentation is required, are summarized in *In re Wands* (858 F.2d 731, 8 USPQ 2nd 1400 (Fed. Cir. 1988)) as follows: (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claim(s).

Claims 2, 4-17, 19-20, 22, 26 are so broad as to encompass any polynucleotide from any or all sources encoding an endoglucanase, vectors host cells and methods of expressing said endoglucanase and a recombinant host cell in which the polynucleotide encoding the endoglucanase is inactivated. Claims are also so broad and non-enabling because they not only encompass a polynucleotide encoding an endoglucanase from any or all sources but also encompass any variant or mutant polynucleotides encoding polypeptides that have 90%, sequence identity to SEQ ID NO:2. The scope of the claims is not commensurate with the enablement provided by the disclosure with regard to the extremely large number of polynucleotides broadly encompassed by the claims.

Claim 2 is drawn to any polynucleotide encoding any endoglucanase (even though applicants coin the term EGVI) from any or all sources. The source is a large group of including several hundreds and thousands of members. Applicants have provided support in their specification for isolation of a polynucleotide encoding an endoglucanase only from a single fungal source. Applicants have not taught a universal method of isolation and characterization of polynucleotides encoding endoglucanases from any or all sources. While methods to cultivate a good number of microorganisms, plants and animals are well known in the art, there is no universal single method for cultivating, testing and isolating endoglucanase from any or all species. As stated earlier, members of the source are diverse with varied nutritional and growth requirements. Therefore, it would be undue experimentation for those skilled in the art to test each and every species for polynucleotides encoding endoglucanase using the method provided by the applicants which applies to only a single fungal species, *Trichoderma*. Applicants have not shown that the method they have used for isolation of the

polynucleotide from *Trichoderma* can be successfully used for each and every source that are known and unknown to man.

With respect to claims directed to variant polynucleotides encoding polypeptides that have 90%, sequence identity to SEQ ID NO:2, or polynucleotides that hybridize to SEQ ID NO:1 under medium to high stringent conditions, applicants have not taught those skilled in the art as to how to make and select the claimed polynucleotides, which leads to undue experimentation for those skilled in the art. Since the amino acid sequence of a protein encoded by a given polynucleotide, determines its structural and functional properties, predictability of which changes can be tolerated in a protein's amino acid sequence to obtain the desired activity, requires a knowledge of and guidance with regard to which amino acids in the protein's sequence, if any, are tolerant to modification and which are conserved (i.e. expectedly intolerant to modification), and detailed knowledge of the ways in which the proteins' structure relates to its function. However, in this case the disclosure is limited to the nucleotide and encoded amino acid sequence of only a single endoglucanase, obtained from *T.reesei* and having an amino acid sequence SEQ ID NO:2 . Putting it in simpler terms, the specification is silent regarding the specific amino acids or specific regions in the amino acid sequence of SEQ ID NO:2 that can be modified (by insertion, deletion or substitution) without affecting the endoglucanase activity which could be used to construct variant polynucleotides. Therefore, it would require undue experimentation by a skilled artisan to identify such regions that can be changed and make and use all the claimed variant polynucleotides. The specification is limited to teaching the use of just SEQ ID NO:4 as polynucleotide encoding the polypeptide with SEQ ID NO:2. In view of the great breadth of the claim, amount of experimentation required to make the claimed

polynucleotides, the lack of a universal method of isolating polynucleotides encoding an endoglucanase from any fungi and lack of guidance regarding where to make the changes in the polypeptide/nucleotide sequences, working examples, and unpredictability of the art in predicting function from a polypeptide primary structure (e.g., see Ngo et al. in The Protein Folding Problem and Tertiary Structure Prediction, 1994, Merz et al. (ed.), Birkhauser, Boston, MA, pp. 433 and 492-495, Ref: U, Form-892) to make a polynucleotide sequence, the claimed invention would require undue experimentation. As such, the specification fails to teach one of ordinary skill how to make and use the full scope of the polynucleotides encompassed by this claim.

While recombinant and mutagenesis techniques are known and it is routine in the art to screen for multiple substitutions or multiple modifications, as encompassed by the instant claims, the positions within a protein's sequence where amino acid modifications can be made with a reasonable expectation of success in obtaining the desired activity/utility are limited in any protein and the result of such modifications is unpredictable. In addition, one skilled in the art would expect any tolerance to modification for a given protein to diminish with each further and additional modification, e.g. multiple substitutions.

The specification does not support the broad scope of the claims which encompass polynucleotides encoding endoglucanase from any or all sources, polynucleotide encompassing any or all modifications and fragments encoding a polypeptide with 90%, identity to the SEQ ID NO:2 or polynucleotides that hybridize under intermediate to high stringency conditions to a probe (of any length or function) designed to hybridize to the polynucleotide with SEQ ID NO:1, because the specification does not establish: (A) a single universal method to isolate

polynucleotides encoding endoglucanse from any fungi; (B) a single universal method to inactivate polynucleotides encoding endoglucanse from any fungi in any host cell; (C)regions in the polynucleotide structure which may be modified without effecting its activity of encoding a functional endoglucanase; (D) the general tolerance of said polynucleotide sequence to modification and extent of such tolerance; (E) a rational and predictable scheme for modifying any nucleotide in any fungal polynucleotide with an expectation of obtaining the desired biological function; and (F) the specification provides insufficient guidance as to which of the essentially infinite possible choices is likely to be successful.

Thus, applicants have not provided sufficient guidance to enable one of ordinary skill in the art to make and use the claimed invention in a manner reasonably correlated with the scope of the claims broadly including polynucleotides from any fungi or polynucleotides with an enormous number of modifications of to the polynucleotide encoding the amino acid with SEQ ID NO:2 (SEQ ID NO:4). The scope of the claims must bear a reasonable correlation with the scope of enablement (*In re Fisher*, 166 USPQ 19 24 (CCPA 1970)). Without sufficient guidance, determination of polynucleotides having the desired biological characteristics is unpredictable and the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue. See *In re Wands* 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988).

In response to the previous Office action, applicants have traversed the above rejection. Applicant argues that it is well settled in the law that the specification need not teach what is well known in the art and that glycosyl hydrolases, including family 74. Applicant also argues that conserved residues for family 74 glycosylhydrolases are known which aid the practitioner in

aligning sequences and which provides information on various regions of the polypeptide. Applicant also takes issue with the Examiner's assertion that the art is unpredictable and provide the reference of Mosimann et al. which concludes that where sequence identity between the target and the template is greater than 70%, comparative modeling is highly successful. Applicants also assert that they have provided guidance on applicable assays for measuring endoglucanase activity and those skilled in the art would be able to quickly determine the activity of the encoded protein. Examiner respectfully disagrees with such highly misplaced arguments. Indeed applicant's claims are directed to extremely large number of polynucleotides involving undue experimentation. Applicant is claiming any or all polynucleotides encoding endoglucanse literally from any or all sources. With respect to variant polynucleotides, applicant's arguments are not persuasive because while methods to produce variants of a known sequence such as site-specific mutagenesis, random mutagenesis, etc. are well known to the skilled artisan producing variants as claimed by applicants requires that one of ordinary skill in the art be provided with guidance for making specific changes and for the selection of which of the large number of variants have the claimed property. Without such guidance one of ordinary skill would be reduced to the necessity of producing and testing all of the virtually infinite possibilities. This would clearly constitute undue experimentation. While enablement is not precluded by the necessity for routine screening, if a large amount of screening is required, the specification must provide a reasonable amount of guidance with respect to the direction in which the experimentation should proceed. Such guidance has not been provided in the instant specification. As previously stated the specification does not establish: (A) a single universal method to isolate polynucleotides encoding endoglucanse from any fungi; (B) a single universal

method to inactivate polynucleotides encoding endoglucanse from any fungi in any host cell; (C)regions in the polynucleotide structure which may be modified without effecting its activity of encoding a functional endoglucanase, EGVII; (D) the general tolerance of said polynucleotide sequence to modification and extent of such tolerance; (E) a rational and predictable scheme for modifying any nucleotide in any fungal polynucleotide with an expectation of obtaining the desired biological function; and (F) the specification provides insufficient guidance as to which of the essentially infinite possible choices is likely to be successful. Therefore the above rejection is maintained.

Claims 22 and 26 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. These claims are directed to a genus of DNA molecules encoding endoglucanase, and a method of producing endoglucanase, using DNA molecules encoding any endoglucanase in a *Aspergillus* host cell.

The specification does not contain any disclosure of the structure of all DNA sequences that are encompassed by the claims. The genus of DNAs that comprise these above DNA molecules is a large variable genus with the potentiality of having many different structures. Therefore, many structurally unrelated DNAs are encompassed within the scope of these claims, including partial DNA sequences. The specification discloses only a single species of the claimed genus which is insufficient to put one of skill in the art in possession of the attributes and features of all species within the claimed genus. Therefore, one skilled in the art cannot

reasonably conclude that the applicant had possession of the claimed invention at the time the instant application was filed.

Applicant is referred to the revised guidelines concerning compliance with the written description requirement of U.S.C. 112, first paragraph, published in the Official Gazette and also available at www.uspto.gov.

In response to the previous Office action, applicant argues that claim 1 has been cancelled and that remaining claims are directed to a specific set of naturally occurring enzymes with endoglucanase activity. Examiner respectfully disagrees. Claims 22 and 26 are directed to any or all endoglucanases even though applicants may have called the endoglucanse as *egl6* or EGVI. Applicants continue their misplaced argument that it is not necessary to teach what is well known in the art. Such argument is not persuasive to overcome the above written description rejection. As discussed in the written description guidelines, the written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species by actual reduction to practice, reduction to drawings, or by disclosure of relevant, identifying characteristics, i.e., structure or other physical and/or chemical properties, by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show the applicant was in possession of the claimed genus. A representative number of species means that the species which are adequately described are representative of the entire genus. **Thus, when there is substantial variation within the genus, one must describe a sufficient variety of species to reflect the variation within the genus.** Satisfactory disclosure of a representative number depends on whether one of skill in the art would recognize that the applicant was in

possession of the necessary common attributes or features of the elements possessed by the members of the genus in view of the species disclosed. For inventions in an unpredictable art, adequate written description of a genus which embraces widely variant species cannot be achieved by disclosing only one species within the genus. In the instant case the claimed genera of polynucleotides from all or any fungi includes species which are widely variant in structure. The genus of the claimed polynucleotides is structurally diverse. As such, neither the description of the structure SEQ ID NOS:4 nor the disclosure solely functional features present in all members of the genus is sufficient to be representative of the attributes and features of the entire genus. Hence the above rejection is maintained.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 8-9, 11, are rejected under 35 U.S.C. 102(b) as being anticipated by Shin et al.(Sanop Misaengmul Hakhoechi, (Korean J. Appl. Microbiol. Biotechnol.)1998, Vol. 26(5):406-412). This rejection is based upon the public availability of a printed publication. Claims 8-9, 11, 22 of the instant application are drawn to an isolated polynucleotide capable of hybridizing to a probe derived from the nucleotide sequence SEQ ID NO:1 under conditions of intermediate to high stringency conditions, a vector comprising said polynucleotide operably linked, a host cell transformed with said vector. Shin et al. disclose a polynucleotide, *egl6*, encoding an

endoglucanase egl6, isolated from a *Trichoderma* sp., *T.reesei*. The reference also discloses RNA molecule, an expression vector comprising said polynucleotide which because of the identical source, Examiner considers capable of hybridizing to a probe *derived* from the nucleotide sequence encoding the polypeptide with SEQ ID NO:2, a vector comprising said polynucleotide operably linked, a eukaryotic host cell transformed with said vector and a method of producing said endoglucanase using the transformed host cells. Therefore, Shin et al. anticipate claims 8-9, 11 as written.

Since the Office does not have the facilities for examining and comparing applicants' polynucleotide with the polynucleotide of the prior art (i.e., whether it is capable of hybridizing to the polynucleotide encoding the polypeptide with SEQ ID NO:2), the burden is on the applicant to show a novel or unobvious difference between the claimed product and the product of the prior art (i.e., that the DNA of the prior art does not possess the same material structural and functional characteristics of the claimed DNA). See *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and *In re Fitzgerald* et al., 205 USPQ 594.

In response to the previous Office action, applicant has traversed the above rejection arguing that Shin et al. provide a nucleotide sequence that would allow comparison with the applicants egl6 nucleotide and that the protein encoded in the reference has a lower molecular weight (63 kDa versus 87 kDa of the encoded polypeptide). Applicant also argues that the reference polynucleotide is isolated from C-4 species and the ORF consists of 1254 bases etc. Examiner respectfully disagrees with such an argument as persuasive to overcome the above rejection. Shin et al. clearly isolate the polynucleotide and the encoded polypeptide having endoglucanase (egl6) activity from the very same microorganism as in the instant application.

Also, the argument that there is a difference in the molecular weight of the encoded polypeptide has little bearing on applicant's argument. This is because, claims rejected now have no limitations of molecular size of the encoded polypeptide or the ORF or the specific species. Such an argument would have been persuasive if the source of the reference polynucleotide and the encoded enzyme was different from that in the instant application. Furthermore, a perusal of figure 4 indicates extra bands in the high molecular region of the gel which may be due to proteolysis of the full length endoglucanase. Therefore it can be argued that the combined molecular weight of all the bands would be well within the experimental value of 87kDa to 90kDa. Applicant's argument that the reference polynucleotide is different based on molecular weight and ORF does not apply to the instant claims that have been rejected. Therefore the above rejection is maintained.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shin et al. and Ward et al. (US 6265204, 7-2001). Claim 26 is drawn to a method of expressing a heterologous polypeptide having endoglucanase activity in an Aspergillus species by transforming a Aspergillus host cell with an expression vector comprising a polynucleotide encoding a signal

sequence linked to a polynucleotide encoding a heterologous endoglucanase encoding a chimeric polypeptide followed by cultivating said host cell such that the chimeric polypeptide is produced.

Shin et al. teach a polynucleotide isolated from Trichoderma sp. encoding a polypeptide with endoglucanase activity. However, the reference does not teach the production of the same in a Aspergillus host cell as a chimeric polypeptide linked to a heterologous signal peptide sequence.

Ward et al. teach methods of preparing expression constructs comprising heterologous signal peptide sequence for secretion of heterologous polypeptide in filamentous fungal host cells such as *Aspergillus*. Ward et al. teach that filamentous fungal host cells make ideal hosts for expressing heterologous polypeptides.

With the above two references in hand it would have been obvious to those skilled in the art to use the polynucleotide sequence obtained from *Trichoderma* sp. encoding a endoglucanase and provided by Shin et al. and introduce it into vectors provided by Ward et al. and express the same in filamentous fungal host cells such as *Aspergillus*. One of ordinary skill in the art would have been motivated to do so as Ward et al. teach that filamentous fungus host cells secrete the polypeptide into the culture medium thereby making it easy for isolation of the polypeptide and the endoglucanase enzyme thus produced has commercial demand in paper industry. One of ordinary skill in the art would have a reasonable expectation of success since Shin et al. provide the polynucleotide encoding an endoglucanase and Ward et al. provide vector and host cells to express the endoglucanase.

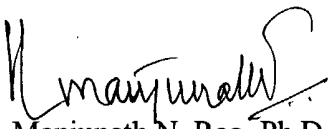
Therefore, the above invention would have been *prima facie* obvious to one of ordinary skill in the art.

In response to the previous Office action, applicant has traversed the rejection arguing that Shin fails to teach an EGVI as provided in the instant invention and that there is no suggestion or teaching that it should be combined with Ward et al. Applicant continues the tangential argument that since Shin et al. show that majority of the enzyme produced in yeast was secreted there would be no motivation for the skilled artisan to use another expression system. Applicant continues the tangential argument that Shin et al. used *adh1* promoter etc. and that there is no teaching that said promoter would work in *Aspergillus.* In summary, applicant appear to be arguing that Shin et al. should have provided all the support in order for it to be eligible as a reference for the rejection. Examiner respectfully disagrees with such an argument and reminds applicants that this is an obvious rejection and not a rejection under the 102 statutes. Examiner has used the reference of Shin et al. only to show the teaching of egl6 irrespective of which promoter or vector or host cell used for producing the polypeptide or whether it was secreted or which promoter was used for expression. While Shin et al. provides a polynucleotide encoding an egl6 endoglucanse, Ward et al. a general reference aimed at production of any heterologous polypeptide in Aspergillus host cell provides the rest. Therefore as explained in the rejection those skilled in the art specifically those interested in production of egl6 in a large commercial scale would be highly motivated to select for such industrial scale methods one of which is taught by Ward et al. Applicant's final argument that those skilled in art would not have reasonable expectation of success in transferring one expression construct from one host to another etc. is highly misplaced as there are no such limitation in the claims. For all the above reasons, the above rejection is maintained.

Conclusion

None of the claims except 23-24 are allowable.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Manjunath N. Rao, Ph.D. whose telephone number is 571-272-0939. The Examiner can normally be reached on 7.00 a.m. to 3.30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Ponnathapura Achutamurthy can be reached on 571-272-0928. The fax phone numbers for the organization where this application or proceeding is assigned is 703-872-9306/9307 for regular communications and for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-1600.



Manjunath N. Rao, Ph.D.
Primary Examiner
Art Unit 1652

November 2, 2004